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(54) VEHICLE WHEEL DRIVE UNIT

(71) We, BRITISH LEYLAND UK LIMITED, a British Company of Leyland House, 174 Marylebone Road, London NW1 5AA, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to vehicle wheel drive units and particularly to final drive units for vehicle rear axles, and also relates to vehicles incorporating such units; and the invention concerns drive units that incorporate variable ratio mechanisms.

It is of course known for the final drive unit of a vehicle rear axle to incorporate a gearbox, and, furthermore, it is known for vehicles to have a continuously variable ratio mechanism that comprises a pair of variable diameter pulleys interconnected by an endless belt such as to provide a stepless, continuously variable ratio, mechanism.

The object of this invention is to provide an arrangement by which a variable diameter pulley mechanism may be incorporated in a vehicle wheel drive unit.

According to the invention a vehicle wheel drive unit comprises:

a) an input shaft adapted to be connected to a drive shaft and carrying a bevel gear;

b) a pair of bevel gears mounted for rotation on a common shaft and meshing with the bevel gear on the input shaft;

c) a dog clutch mechanism splined to the said common shaft and selectively engageable with each of the said pair of bevel gears;

d) a variable diameter input pulley drivable by the said common shaft;

e) a variable diameter output pulley connected to the input pulley by an endless belt and connected to drive a differential through a planetary reduction gearset.

Preferably the dog clutch mechanism is arranged not only to selectively engage either of the pair of bevel gears, but is also arranged to selectively engage both gears simultaneously in order to provide a parking brake facility.

Conveniently a drive unit according to the invention is incorporated in a vehicle in conjunction with a hydro-kinetic converter fitted to the engine.

An example of a drive unit according to the invention will now be described with reference to the accompanying drawing in which the single figure is a partially cross sectioned plan view of a rear axle final drive unit.

Referring to the drawing, an input shaft 11 is mounted on bearings 12 within a housing 13.

The shaft 11 carries a bevel gear 14 which meshes with a pair of bevel gears 15 and 16 journalled on a shaft 17, and a dog clutch mechanism comprising clutch members 18 and 19 is splined on the shaft 11 for engagement with the gears 15 and 16 such as to give forward or reverse drive and also a parking brake facility.

The shaft 11 also carries a variable diameter input pulley comprising a fixed sheave 20 and a movable sheave 21, and the shaft assembly is mounted in bearings 22 and 23.

The variable diameter input pulley 20 and 21 is connected by an endless, steel, drive belt 24 to an output pulley comprising a fixed sheave 25 and a movable sheave 26 mounted in bearings 27 and 28.

The output pulley 25 and 26 incorporates a sun gear 29 arranged to drive a differential unit 30 through planetary gears 31 reacting against an annulus gear 32 fixed to a web 33 cast integrally with the housing 13.

Half shafts 34 and 35 engage the differential unit 30 in conventional manner, and the outboard end of the differential unit is supported by a taper roller bearing 36.

As will be appreciated from the drawing such an arrangement provides a particularly compact unit which can release additional space for passenger accommodation as compared to known variable diameter pulley tranmission arrangements.

WHAT WE CLAIM IS:—

1. A vehicle wheel drive unit which comprises

a) an input shaft adapted to be connected to a drive shaft and carrying a bevel gear;

b) a pair of bevel gears mounted for rotation on a common shaft and meshing with the bevel gear on the input shaft;

c) a dog clutch mechanism splined to the said common shaft and selectively engageable with each of the said pair of bevel gears;

d) a variable diameter input pulley driveable by the said common shaft;

e) a variable diameter output pulley connected to the input pulley by an endless belt and connected to drive a differential through a planetary reduction gearset.

2. A vehicle wheel drive unit axle as claimed in Claim 1 in which the dog clutch medhanism is arranged not only to selectively engage either of the pair of bevel gears, but is also arranged to selectively engage both gears simultaneously in order to provide a parking brake facility.

3. A vehicle wheel drive unit axle substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

4. A vehicle incorporating a wheel drive unit axle as claimed in any one of the preceding Claims.

5. A motor vehicle as claimed in Claim 4 which also includes a hydro-kinetic converter fitted to the engine of the vehicle.

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1558726 COMPLETE SPECIFICATION

1 SHEET This drawing is a reproduction of the Original on a reduced scale